

## Foreword

The national olympiads do not exist in isolation, and the papers in the ninth time organized conference of the *International Olympiad in Informatics*, or the *IOI* as it is frequently called, showed how similar problems arise in different countries, and different environments. This conference concentrates on a variety of topics, and many of the ideas and experiences are drawn from the national olympiads.

In this volume, we have published a few papers directly focused on the development of the *IOI*. Stefano Maggiolo paper “An update on the female presence at the *IOI*” discusses the unbalanced gender ratio in computer science. With the help of the delegations that answered the prepared questionnaire, the author gathered statistics about the gender of contestants and leaders to show that the female participation at the *IOI* is even lower. Increasing the participation of female students is the most natural way of continuing to fulfil the goal of the *IOI* of promoting the discipline of informatics among young people, and eventually to improve the performances of the teams by increasing the pool of candidates. The performances of female contestants can be improved for example through training programs, and by removing stereotype threat. Also reintroducing the requirement of mixed gender for complete teams, as a way of encouraging countries to put in place programs promoting gender balance, can be considered.

The paper “Organising National Olympiads in Informatics: a Review of Selection Processes, Trainings and Promotion Activities” by Sébastien Combéfis and Alexis Paques reviews common structural elements and activities organised by several countries, for the advertisement of the national contest, the steps of the selection process and the proposed trainings. Specific activities added by countries according to cultural aspects or other country-specific characteristics are highlighted with the reasons motivating the integration of those activities. The paper summarises the key activities that could be organised by any country, with explanations about what they bring to the national contestants and motivation for their organisation. The authors draw the conclusions, that more cooperation and collaboration should be established between countries, so that informatics education communities may get closer at reaching the common goal of spreading programming and improving its presence in education.

It has been an aim of the *IOI* conference, since it was established, to become part of, and bring in, the wider pedagogical community. We have not had many papers authored from those outside the *IOI*, but one or two have appeared in each volume. In this volume we have detailed paper on the “Effectiveness of Robotics Competitions on Students’ Learning of Computer Science” written by researchers Fatima Kaloti-Hallak, Michal Armoni, and Mordechai (Moti) Ben-Ari from Weizmann Institute of Science. This work

investigates students' learning of computer science as part of a research project on students' learning of and attitudes toward STEM (Science, Technology, Engineering, and Mathematics) subjects during their participation in robotics activities. The population consisted of groups of middle-school students (ages 13–15 years). The methodology used is both qualitative and quantitative using questionnaires, observations and interviews during the school year 2013–2014.

A few other papers in this volume deal with special software for generating tests or creating interactive tasks, and with selection of talented students in programming competitions. There are reasonings on several research methods: Jūratė Skūpienė analyses the “Multiple Criteria Decision Methods in Informatics Olympiads”; Michal Forišek describes a better way to teach dynamic programming, Mirzakhmet Syzdykov and Madi Uzbekov presents an “Ant Colony Optimisation applied to non-slicing floor planning”.

In the second part of the volume Syria and Turkey present interesting and thoughtful country reports. Technical report from the Baltic Olympiad in Informatics organised in Lithuania this year are presented as well. Detailed report of the IOI Workshop'2015 “Creating an International Informatics Curriculum for Primary and High School Education” deals with the role of informatics in the primary and secondary education. The Workshop participants tried to encapsulate several activities that might give insight on how to treat this issue with success.

At the end the VisuAlgo – visualising data structures and algorithms through animation are presented by Steven Halim.

As always, thanks are due to all those who have assisted with the current volume – authors, reviewers and editors. A lot of work is required, not only to write the papers, but to an extended period of reviewing and correction. Peer reviewing all of the papers takes a significant amount of time and work. Special thanks should be given to those people.

Last, but by no means least, particular thanks are due to the organisational committee for IOI'2015 in Almaty, Kazakhstan without whose assistance we would be unable to hold the conference. Their assistance, during what is an already busy period, is gratefully received.

Editors